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# PLEA 2017 EDINBURGH

*Design to Thrive*



## The Societal Impact Methodology – Connecting Citizens, Sustainability Awareness, Technological Interventions & Co-creative City Visions

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**Abstract:** Sustainability needs professionals and methodologies that can bring the architecturally qualitative and scientifically quantitative together to reveal the latent potential of our cities and people. These experts must have the necessary communication skills, personalities and backgrounds to firmly place city stakeholders at the heart of this local and global challenge. This approach, developed during the City-zen Project 'Roadshow' (a European Union FP7 funded initiative to develop and demonstrate Zero Energy Cities), began life as a powerful but over simplistic idea. It has since developed into a realizable, mobile, intense, creative, amenable and proven approach that supports cities in their efforts toward carbon descent. The methodology continues to evolve 'city-by-city' by embracing diverse climates, cultures, economies, existing urban morphologies and building typologies. It has been successfully applied in Amsterdam, Belfast, Izmir, Dubrovnik and Menorca. Upcoming destinations will be Sevilla (Spain), Roeselare (Belgium) and Klaipeda (Lithuania). A team of internationally recognized experts in sustainable urbanism & architecture, carbon accounting, energy potential mapping and advanced technologies travel with the City-zen Roadshow to facilitate this approach. This paper will describe the Societal Impact Methodology with reference to previous outcomes, activities, experiences and a detailed explanation of two mutually dependent and inspirational parallel workshops.

**Keywords:** Societal, Methodology, Impact, Sustainability, Vision.

### Introduction

The City-zen Roadshow travels with a team of internationally recognized experts in the field of energy planning and design to help develop a sustainable agenda for cities and their neighbourhoods. It will visit 10 cities in total over a 4-year period, cities who are seeking expert guidance on how to become sustainable and wish to move towards energy neutrality. The overall aim of the Roadshow team, who are known as the 'Roadies', is to work closely with people from the hosting city, whether they be city leaders, neighbourhood associations, energy planners, architects, academics, students and of course the citizens themselves as illustrated in Figure 1. The event stays in each hosting city for 5 days, pre-Roadshow preparations taking at least 2 to 3 months. Local stakeholders are welcomed and encouraged to join and to take ownership of the final outcomes. Outcomes that will allow the cities resources, their people, knowledge and renewable energy potential to be directed effectively by first highlighting the neighbourhoods lifestyle and energy challenges. Finally,

on the last day a definitive sustainable ‘City Vision’ or ‘Island’ Vision (in the case of the Menorca Roadshow) is presented.

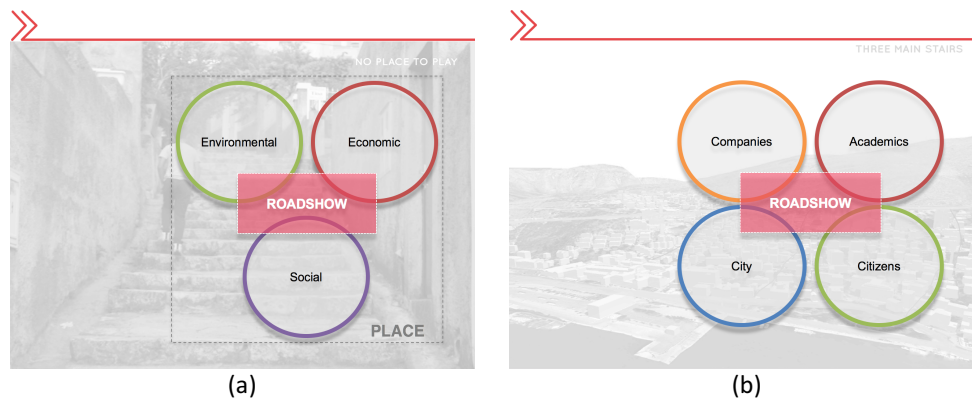


Figure 1. (a) The Roadshow investigates Environmental, Economic and Social aspects of each Roadshow city to develop a ‘City Vision’ that is specifically tailored to respond to place. (b) The Roadshow team brings together all stakeholders, it facilitates this 5-Day event to propose a sustainable ‘City Vision’ that is ‘owned’ by the City.

This paper will describe the underlying approach known as the ‘Societal Impact Methodology’ undertaken before, during and after each City-zen Roadshow. It will include a brief explanation of the ‘City Visions’ that resulted. City engagement is an exciting and thought-provoking prospect. Many questions arise at the beginning the journey. Making first contact with a prospective Roadshow location, conducting preparations, explanations and agreements is far from an exact science. There can be many political, cultural and language obstacles to overcome. The outcomes must have the power to inspire and potentially be realised post-Roadshow. The first questions are who is ‘the City’? What are the city’s sustainable expectations and current agenda if they indeed have one? What is the energy demand, current and future? Where are the urban challenges, are they purely energetic, spatial, administrative or a combination of all? Does the ‘City’ even realize or accept they have challenges, despite its want to be sustainable and to collaborate?

To answer these questions and many others, the Roadshow team began the process of identifying the cities that need and want our collaboration. First contact will be described in ‘FIRST CONTACT’, which primarily describes an educational workshop studio, known as the SWAT Studio, which occurs in the months leading up to the Roadshow. This student-focussed workshop facilitates an extended and detail discussion with city stakeholders. ‘FIVE DAYS’ describes the methodology on a day-to-day ‘themed’ basis that guides the evolution of the vision in which expert input would be delivered at key points throughout the five days. ‘PARALLEL’ will visually communicate what activities took place. It must be noted that a Roadshow is not intended to be a one-way stream of information and ideas, instead the method aims to activate, convince and openly invite and encourage ‘the City’ to be part of the process at any level that they feel comfortable with. The method includes going out of the studio and into the community to engage with various initiatives and to meet and talk with their members. The final outcomes of the Roadshow are graphically presented in ‘VISION’. This briefly describes design strategies and detail proposals that are qualitatively spatial and quantitatively energy focused, both combining to make the vision itself. The Societal Impact Methodology selects Roadshow cities that have diverse climates, urban typologies, economies, cultural backgrounds etc... Under certain circumstances cities with ambient political tensions, such as Belfast and Izmir have and will be selected.

### ***Aims, Goals & Target Audience***

The experiences of each Roadshow will advance the Societal Impact Methodology. It is the intention that the approach is capable of implementation in all cities to help co-create a city's sustainable vision. Vision ownership is key. Proposals developed exclusively by the Roadshow team, and not by the multidisciplinary city stakeholders, would physically and metaphorically leave with the Roadshow.

To identify, reach and collaborate with city 'decision makers' and those passionate about their own neighbourhoods and lifestyles as we all move toward energy neutrality. It is vital that a legacy remains in which all participatory groups continue to exchange knowledge and speak with a single voice. In this way later research bids can be heard more effectively. In addition, such a local network to be strengthened by connections to a global family of Roadshow cities, where experiences can be shared with those about to host a Roadshow in the near future. This Glocal network being a catalyst for further research and realisation of sustainable interventions projects across the wider community of Europe.

The most important target group are inhabitants of the neighbourhood, city and wider hinterland of the hosting conurbation. For practicality 'citizens' are defined as community leaders, influencers and those passionate in how their day-to-day lifestyles and surroundings will be affected by their ever-growing dependency on finite fossil fuels. Companies and start-ups in the field of technology and sustainability are encouraged to be active participants during the Roadshow. The Roadshow and pre-Roadshow S.W.A.T. Studio engage with students from academic institutions located in the hosting city. A key objective is reach 600 students across the EU by visiting local universities, colleges and secondary schools during the 5-Day event. Students are the future. It has been mutually beneficial idea to combine the energy and enthusiasm of Master's students from the Delft University of Technology with that of the stakeholders and students of each hosting Roadshow city. The student SWAT projects, and more significantly the close relationships that were forged while collaborating on them, lay the foundation on which later to build the Roadshow. Promotion, full participation and dissemination contribute significantly to overall success, as a consequence the Roadshow and SWAT Studio leader will encourage a municipality to grasp the opportunity to do so and allay any reservations or fears they may have. It is not the intention of the event to criticize a cities lack of sustainability, as specialists we are aware of many complex global and local level obstacles to energy transition. The Roadshow will work with the municipality for the betterment of all.

### **FIRST CONTACT: Pre-Roadshow Preparation (SWAT Studio)**

#### ***What is SWAT?***

SWAT (Sustainable Workshop Architecture + Technology) is a Masters level student workshop where Building Technology students from the Faculty of Architecture at the Delft University of Technology develop and propose innovative, sustainable, contextually sensitive urban design interventions. A key ambition of the workshop is always to demonstrate that, through building interventions at all scales ranging from façade, building, street, neighbourhood and district, that sustainable lifestyles are possible within existing cities. The SWAT is a precursory educational event to the later specialist Roadshow. In Bornova, (Izmir) at the University of Yasar, SWAT forged pre-Roadshow relationships with key city stakeholders, allowing project sites to be evaluated and selected. This preparatory SWAT visit occurred in Belfast, Dubrovnik and more recently in Menorca (March 2017). The



outputs of each sustainable workshop would be presented on DAY 1 of the Roadshow. The SWAT made positive connections with academic and municipality leaders and sustainable energy and smart city entrepreneurs. In Croatia, the Development Agency of Dubrovnik would take the lead and host the event from this connection an extended link was made with city leaders and start-up companies.

### ***SWAT in Bornova (Izmir) & Belfast (UK)***

Figures 2 and 3 represent typical outputs and collaborations during the Izmir and Belfast SWAT Studio:

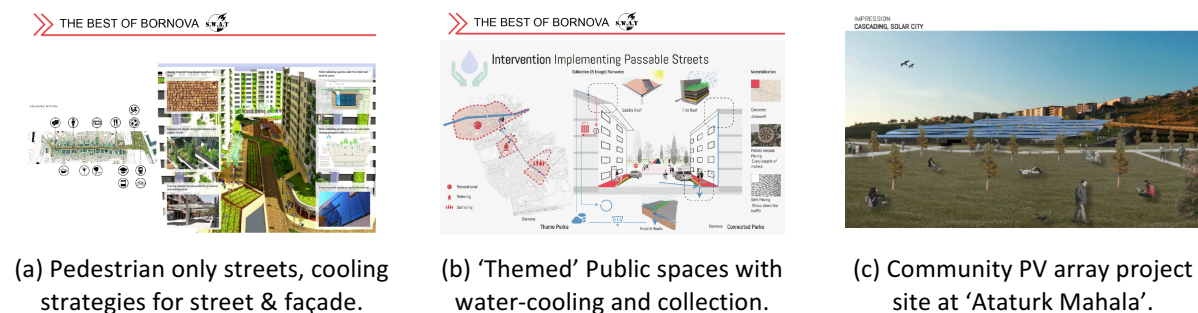


Figure 2. Selection of SWAT Workshop design proposals outlining future visions for Bornova (Izmir).

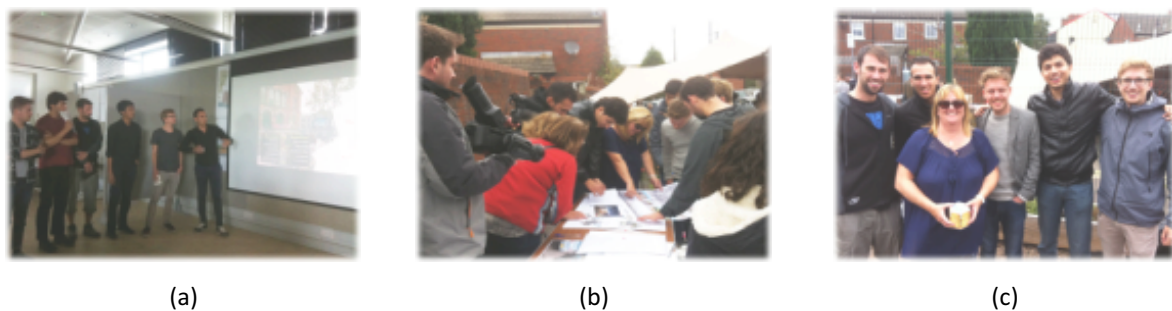


Figure 3. (a) The Belfast SWAT Studio. (b) & (c) Student proposed interventions Botanic Avenue neighbourhood, students presenting their final designs to the community with the local media in attendance. Relationships made with the local community over the 2-week work exemplifies the joint aims of SWAT and Roadshow.

## **FIVE DAYS**

### ***Process***

Figure 4 overleaf illustrates the schematic timeline and timetable of the Roadshow that took place in early August 2016 in Bornova. As can be seen under the 'Pre-Roadshow Analysis', the SWAT Studio began 2 months prior to the Roadshow start. Both the SWAT and the Roadshow were developed to be intensive by optimizing time, simplifying communication & explanation, and maximising participation. Components (lectures, site excursions, design workshops and mini-masterclasses) within the 5-Day period were strategically timed at key points to push forward sustainable propositions and to later evaluate them. The outputs, synchronised with specific Roadies specialisms in energy and urban design, were qualitatively spatial and quantitatively energy focused, and combined to form the City Vision on the final day (DAY 5).

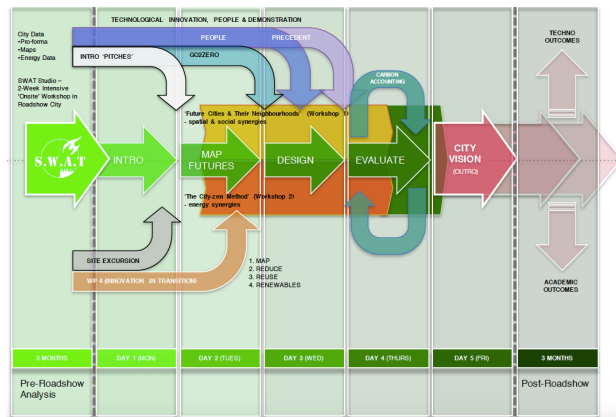


Figure 4. Schematic of the Societal Impact Method for Dubrovnik. First column represents Pre-Roadshow preparations beginning with the SWAT. DAYS 1 to 5 relate to the stage referred to as the 'Roadshow'.

## Daily Activities & Roadies 'Out & About'

### Daily Activities

In Izmir, a typical daily scenario would involve Architects, Municipality members, PhD students, academics and energy consultant's visiting the Roadshow studio base at the Bornova Archive & Museum, a venue donated by Bornova Municipality. The 5-Day programme was devised in such a way to encourage participants to 'drop-in' and 'drop-out' so that the Roadshow Workshops and Mini-masterclasses could fit into their professional and family schedules, a strategy that would increase city involvement and bolster involvement later in the week. In Belfast, the introductory 'Pitches' on DAY 1 would be held at The Colin Community Hub, a studio base donated by the Colin partnership located in the heart of the project neighbourhood. PechaKucha style presentations (PechaKucha meaning 'chit-chat' in Japanese, is a format that keeps presentations concise and fast-paced, facilitating multiple-speaker events) informed the participants of what to expect. Belfast's stakeholders also contributed on the day with presentations that outline past, present and future aspirations for their city. This would be critical input that helped identify the environmental and political context. For Belfast, a key contributor was Clare McKeown photographed in Figure 3(a) delivering a PechaKucha Pitch. Clare's role as the Sustainable Development Manager at Belfast City Council would give the Roadshow and solid foundation on which to build, comparable roles in Bornova (Izmir) and Mahón (Menorca) would participate in their respective Roadshows.

The Societal Impact Method aims to foster an intensive working environment, yet one, which allows adequate flexibility to ensure maximum participation of stakeholders. It must be respected and appreciated that all stakeholders are likely to have full time jobs and a family life beyond any Roadshow, they are not financially supported to attend. Therefore it is one of the roles of the Roadshow and SWAT leader (Dr Craig Lee Martin, TU Delft) to strike a balance during negotiations between conveying the urgency of being part of the process but not to an extent that it alienates prospective attendees. Whilst the SWAT Studio is underway on location many preparations and discussions take place with stakeholders, here various visual descriptors are used to communicate of what occurs during a Roadshow.

Typical co-creative and intensive scenarios from a workshop session, as depicted in figure 5(b) are incredibly effective in translating what is to come. Coloured marker pens, rolls of tracing paper, laptops and notebooks are the tools of choice for the Roadshow

participants. Activities have the same aim, energy neutrality, however each component is enjoyably diverse and offers new perspectives and skills on how to attain it. While the two parallel workshops run continually over the week participants sign up to play a 'Serious Game'. With the app version under development, Dubrovnik's stakeholders had the chance to 'Role' play an analogue version as seen in figure 3(c). This allows them to have playful fun and experience the cause and effect of energy strategy decisions made at the regional, neighbourhood and family household scale.



(a)



(b)



(c)

Figure 5. Intensive scenarios. (a) PechaKucha presentations set the background context and pace of the Roadshow from the outset. (b) Down to the business as Workshop 2 investigates energy demand and potential. (c) Its both 'Serious' and a playful 'game', the Go2Zero game developed by TU Delft and DNV GL.

### *Out & About*

The societal impact method accepts the challenge of a limited time frame and budget, yet, it seeks to break from the studio setting venture into the community at every opportunity to promote sustainability and the aims and outcomes of the EC funded City-zen project. Day 4 of the Belfast Roadshow took place in St Colms Secondary High School located in the project neighbourhood of Colin (West Belfast). Here the specialist team worked interactively with 14-year students, demonstrating how cities can be more energy efficient. The students became active participants the project and contributed with sketches that would be included in the final City Vision presented on Day 5. In Bornova, the team visited the architecture students of Yasar University to give seminars on urban sustainability and to describe the latest developments of DAY 4 of the Izmir Roadshow.

## **PARALLEL**

### ***Introduction***

Workshops 1 and 2 run daily in parallel throughout the week, on arrival stakeholders are guided to select one workshop depending on their interests or specialisms, however migration to each is recommended in order to get a full overview of energy and urban strategies and their implementation. At the end of each day the workshops meet to summarise their findings and to agree on the next days or that evenings objectives.

### ***Workshop 1: Spatial & Social Synergies***

The aim of Workshop 1 being to inspire people to imagine a more sustainable future, one that embraces the best of new technology in a way that is life enhancing. The workshop encourages freethinking and open-ended discussions about how things should be. It asks stakeholders to imagine new life-styles and then to develop strategies to achieve them. In the communities of Colin (Belfast), Ataturk Mahallesi, Bornova (Izmir) and Graz (Dubrovnik)

the workshop began with an envisioning session about the future, and quickly moved onto designing the infrastructure necessary to achieve these visions. Once the infrastructure was developed a phased strategy would be proposed to achieve these goals. The design part of the Societal Impact Method has clear objectives in that it aims to kick-start carbon descent through the development of a series of options for the neighbourhood. The scope was holistic and arguably over challenging for a typical consultancy team to resolve, however the Roadshow team offered a service that is currently unmatched.

The workshop identified local and global challenges, and responded to them at varying scales under five infrastructural themes; Mobility, Green, Energy, Water and Food. For example at the street scale in Izmir, studies highlighted current anti-pedestrian features such as dangerous crossroads, unused and ineffective pedestrian routes, lack of pavements and green in family parks etc.... It later concluded that the pedestrian is disadvantaged at every scale in favour of the car. Two green infrastructural routes that promoted green, passive and active solar technologies, bike/electric public vehicles and pedestrian use would later meet this challenge. It was empathized that sustainable urban design occurs at several scales, and can be encouraged by creating a series of policies that embody good behaviour as illustrated in figure 6a. The 'City Vision' accepted that illegal development is impossible to prevent in Izmir, hence it was necessary for the residents to work with it to build sustainable infrastructure for the city. Here, compliance would be granted to people who create common benefits. One example being the implementation of a 'Land Swap' strategy where small vacant land parcels in the city would be swapped with City-owned land elsewhere.

#### *Workshop 2: 'Energy Potentials & Future Strategies'*

As with previous Roadshow cities the aim of Workshop 2 was to make an Energy Master Plan. For the neighbourhood of Ataturk Mahallesi (Izmir) the first steps would be to identify existing and implementable sustainable interventions together with the actions that would lead to a zero energy neighbourhood. The objectives were to map the areas energy demand and potentials. This also involved a social, political, economic and climatical analyse of the region. Other than the Roadshow element of the City-zen project, the content and methodology of Workshop 2 forms the basis of another workpackage (WP4) of the City-zen project, in which a general urban energy transition methodology is being developed based upon previously established methodological frameworks such as energy potential mapping, carbon accounting, multimodal system analysis and integrated urban planning concepts (Broersma et al, 2015). A shortened version of this methodology was applied within Workshop 2 in the first 3 Roadshows allowing the WP4 methodology to benefit from Roadshow experiences.

The vision for the Ataturk Mahallesi neighbourhood would be energy efficiency measures (building retrofit) would be being combined with renewable energy provision and storage in a mutually coherent strategy. Each combination of energy measures was quantified and dimensioned for the specific location; starting from initial energy demand and CO2 emissions (step 0), and ending with full zero-energy systems as shown in figure 6b. The scenarios are finally connected with a vision of integrated sustainable urban development and proposed in the 'Spatial & Social Synergies' (Workshop 1).

#### **VISION**

The 'City Vision' takes the form of three overlapping presentations on Day 5. The first briefly outlines the objectives of the City-zen project generally, and specifically the ambitions,

format and activities of the Societal Impact Method to which the Roadshow is the vehicle. The second and third presentations form the major body of the presentation, this being the integrated outcomes of both Workshops. The presentation of Workshop 1 would be qualitative in nature and includes urban planning intervention proposals at the neighbourhood scale, together with spatial, social and building regulation strategies. The third and final presentation would be more quantitative focused on energy strategies, scenarios and carbon offsetting measures.

Figure 6. City Vision. (a) Workshop 1. Anti-heat island green infrastructure. (b) Illicit good behaviour strategy & all citizens being within 200 metres of a 'Pocket park'. (c) Workshop 2. Sustainable water landscape, drinking water consumption, rainwater collection and wastewater production.

The Societal Impact Method has successfully reached out to, and collaborated with, city stakeholders across Europe. It's internationally wide reputation as an innovation and impactful event model is growing. It recently became an example of EC 'Best Practice'. Building upon the upcoming visits to Menorca, Sevilla, Roeselare and Klaipeda, the EC has will extend its reach with 2 additional cities, making 10 in total until 2019. In addition, interpreters and student 'facilitators' will join future events. The key to success has been to identify, reach and gain the trust of city inhabitants and 'decision makers'. To achieve this, an exchange of knowledge, experience and commitment continues to be crucial. As part of the extension 'revisits' will be planned to guide cities on specific aspects of their vision in greater detail. In cases where no future plans have materialized, a return would ascertain the reason for any inactivity.

- Broersma, S. and M. A. Fremouw. (2015) The City-zen approach for urban energy master plans. In: The 5th CIB International Conference on Smart and Sustainable Built Environments (SASBE), 9–11 December 2015. University of Pretoria, Pretoria, South Africa.